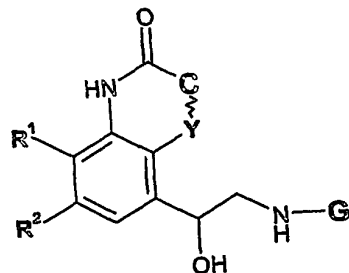


CLAIMS

1. A compound of formula I

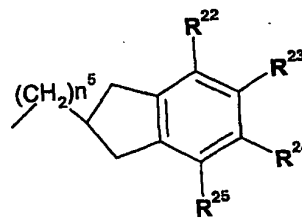
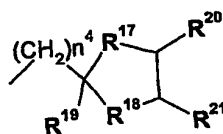
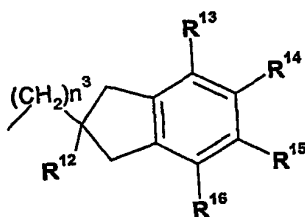
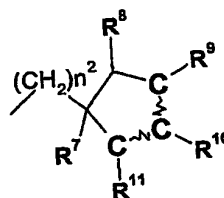
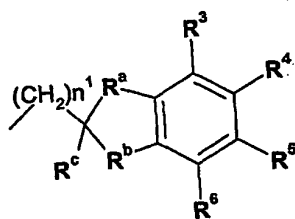


in free or salt or solvate form, where

-C~Y- denotes -CH<sub>2</sub>-CH<sub>2</sub>-, -CH=CH- or -CH<sub>2</sub>-O-;

one of R<sup>1</sup> and R<sup>2</sup> is hydroxy and the other is hydrogen;

G is a group having the formula Ia, Ib, Ic, Id or Ie



n<sup>1</sup> is an integer from 0 to 4;

when n<sup>1</sup> is 0, R<sup>a</sup> is -CR<sup>26</sup>R<sup>27</sup>-, -CH<sub>2</sub>-CH<sub>2</sub>-, -CH<sub>2</sub>-CH<sub>2</sub>-CH<sub>2</sub>-, -CH<sub>2</sub>-O-, -CH<sub>2</sub>-O-CH<sub>2</sub>-,

-CH<sub>2</sub>-S-, -CH<sub>2</sub>-CH<sub>2</sub>-S-, -CH<sub>2</sub>-SO-, -CH<sub>2</sub>-SO<sub>2</sub>- or a bond, and R<sup>b</sup> is -CR<sup>28</sup>R<sup>29</sup>-,

-CH<sub>2</sub>-CH<sub>2</sub>-CH<sub>2</sub>-, -CH<sub>2</sub>-O-, -CH<sub>2</sub>-O-CH<sub>2</sub>-, -CH<sub>2</sub>-S-, -CH<sub>2</sub>-CH<sub>2</sub>-S-, -CH<sub>2</sub>-SO-, -CH<sub>2</sub>-SO<sub>2</sub>- or a bond,

otherwise when n<sup>1</sup> is 1, 2, 3 or 4, R<sup>a</sup> and R<sup>b</sup> are independently -CR<sup>26</sup>R<sup>27</sup>-, -CH<sub>2</sub>-CH<sub>2</sub>-,

-CH<sub>2</sub>-CH<sub>2</sub>-CH<sub>2</sub>-, -O-, -CH<sub>2</sub>-O-, -CH<sub>2</sub>-O-CH<sub>2</sub>-, -S-, -SO-, -SO<sub>2</sub>-, -CH<sub>2</sub>-S-, -CH<sub>2</sub>-CH<sub>2</sub>-S-,

-CH<sub>2</sub>-SO-, -CH<sub>2</sub>-SO<sub>2</sub>- or a bond;

R<sup>c</sup> is hydrogen or C<sub>1</sub>-C<sub>10</sub>-alkyl optionally substituted by a C<sub>5</sub>-C<sub>15</sub>-carbocyclic group or by

C<sub>1</sub>-C<sub>10</sub>-alkoxy,

or when  $R^b$  is  $-\text{CR}^{26}\text{R}^{27}-$  or  $-\text{CR}^{28}\text{R}^{29}-$ ,  $R^c$  and  $R^b$  form a  $\text{C}_5\text{-C}_{15}$ -carbocyclic group;  
 $R^3$ ,  $R^4$ ,  $R^5$  and  $R^6$  are independently hydrogen, halo,  $\text{C}_1\text{-C}_{10}$ -alkyl,  $\text{C}_1\text{-C}_{10}$ -alkoxy, or a 5- or 6-membered heterocyclic ring wherein at least one of the ring atoms is nitrogen, oxygen or sulphur, or any two of  $R^3$ ,  $R^4$ ,  $R^5$  and  $R^6$  that are attached to adjacent carbon atoms on the phenylene ring together form a phenylene ring,  $\text{C}_3\text{-C}_{10}$ -cycloalkyl,  $\text{C}_3\text{-C}_{10}$ -cycloalkenyl or 5- or 6-membered heterocyclic ring wherein at least one of the ring atoms is nitrogen, oxygen or sulphur;  
 $R^{26}$ ,  $R^{27}$  and  $R^{28}$  are independently hydrogen,  $\text{C}_1\text{-C}_{10}$ -alkyl or  $\text{C}_1\text{-C}_{10}$ -alkoxy, either of which being optionally substituted by a  $\text{C}_5\text{-C}_{15}$ -carbocyclic group;  
 $R^{29}$  is  $\text{C}_1\text{-C}_{10}$ -alkyl or  $\text{C}_1\text{-C}_{10}$ -alkoxy, either of which being optionally substituted by a  $\text{C}_5\text{-C}_{15}$ -carbocyclic group;

$n^2$  is an integer from 0 to 4;

$\text{C}\sim\text{C}$  denotes  $\text{C}=\text{C}$  or  $\text{CH}\sim\text{CH}$ ;

$R^7$  is hydrogen or  $\text{C}_1\text{-C}_{10}$ -alkyl optionally substituted by a  $\text{C}_3\text{-C}_{15}$ -carbocyclic group or by  $\text{C}_1\text{-C}_{10}$ -alkoxy;

$R^8$  is hydrogen, hydroxy,  $\text{C}_1\text{-C}_{10}$ -alkyl or  $\text{C}_1\text{-C}_{10}$ -alkoxy;

$R^9$  and  $R^{10}$  are independently hydrogen, halo, a  $\text{C}_3\text{-C}_{15}$ -carbocyclic group, a 5- or 6-membered heterocyclic ring wherein at least one of the ring atoms is nitrogen, oxygen or sulphur,  $\text{C}_1\text{-C}_{10}$ -alkyl optionally substituted by a  $\text{C}_3\text{-C}_{15}$ -carbocyclic group, or  $\text{C}_1\text{-C}_{10}$ -alkoxy optionally substituted by a  $\text{C}_3\text{-C}_{15}$ -carbocyclic group, or  $R^9$  and  $R^{10}$  together form a  $\text{C}_3\text{-C}_{10}$ -cycloalkyl or  $\text{C}_3\text{-C}_{10}$ -cycloalkenyl in either case optionally substituted by  $\text{C}_1\text{-C}_{10}$ -alkyl or  $\text{C}_1\text{-C}_{10}$ -alkoxy;

$R^{11}$  is hydrogen, hydroxy, a  $\text{C}_3\text{-C}_{15}$ -carbocyclic group,  $\text{C}_1\text{-C}_{10}$ -alkyl optionally substituted by a  $\text{C}_3\text{-C}_{15}$ -carbocyclic group, or  $\text{C}_1\text{-C}_{10}$ -alkoxy optionally substituted by a  $\text{C}_3\text{-C}_{15}$ -carbocyclic group;

$n^3$  is an integer from 0 to 4;

$R^{12}$  is  $\text{C}_1\text{-C}_{10}$ -alkyl substituted by  $\text{C}_1\text{-C}_{10}$ -alkoxy,  $\text{C}_7\text{-C}_{15}$ -aralkyloxy, a  $\text{C}_5\text{-C}_{15}$ -carbocyclic group or by a 5- or 6-membered heterocyclic ring wherein at least one of the ring atoms is nitrogen, oxygen or sulphur;

$R^{13}$ ,  $R^{14}$ ,  $R^{15}$  and  $R^{16}$  are independently hydrogen, halo, cyano, carboxy, nitro,  $\text{C}_1\text{-C}_{10}$ -alkyl,  $\text{C}_2\text{-C}_{10}$ -alkenyl,  $\text{C}_1\text{-C}_{10}$ -alkoxy,  $\text{C}_7\text{-C}_{15}$ -aralkyloxy, tri- $\text{C}_1\text{-C}_{10}$ -alkylsilyl, aminocarbonyl, amino,  $\text{C}_1\text{-C}_{10}$ -alkylamino, di( $\text{C}_1\text{-C}_{10}$ -alkyl)amino, a  $\text{C}_5\text{-C}_{15}$ -carbocyclic group or a 5- or 6-

membered heterocyclic ring wherein at least one of the ring atoms is nitrogen, oxygen or sulphur,  
 or any two of  $R^{13}$ ,  $R^{14}$ ,  $R^{15}$  and  $R^{16}$  that are attached to adjacent carbon atoms on the benzene ring together with the carbon atoms to which they are attached form a  $C_3$ - $C_{10}$ -cycloaliphatic ring, a 5- or 6-membered heterocyclic ring wherein at least one of the ring atoms is nitrogen, oxygen or sulphur, or a benzene ring optionally substituted by halo, cyano, hydroxy, carboxy, aminocarbonyl, nitro,  $C_1$ - $C_{10}$ -alkyl,  $C_1$ - $C_{10}$ -alkoxy or  $C_3$ - $C_{10}$ -cycloalkyl;

$n^4$  is an integer from 0 to 4;

$R^{17}$  and  $R^{18}$  are independently  $-CR^{30}R^{31}$ -,  $-CH_2-CH_2-$ ,  $-CH_2-CH_2-CH_2-$ ,  $-O-$ ,  $-CH_2-O-$ ,  $-CH_2-O-CH_2-$ ,  $-S-$ ,  $-SO-$ ,  $-SO_2-$ ,  $-CH_2-S-$ ,  $-CH_2-CH_2-S-$ ,  $-CH_2-SO-$ ,  $-CH_2-SO_2-$  or a bond;

$R^{19}$  is hydrogen or  $C_1$ - $C_{10}$ -alkyl optionally substituted by  $C_1$ - $C_{10}$ -alkoxy,  $C_7$ - $C_{15}$ -aralkyloxy, a  $C_5$ - $C_{15}$ -carbocyclic group or by a 5- or 6-membered heterocyclic group wherein at least one of the ring atoms is nitrogen, oxygen or sulphur;

or when  $R^{18}$  is  $-CR^{30}R^{31}$ -,  $R^{19}$  and  $R^{18}$  form a  $C_5$ - $C_{15}$ -carbocyclic group;

$R^{20}$  and  $R^{21}$  form a 5- or 6-membered heterocyclic ring wherein at least one of the ring atoms is nitrogen, oxygen or sulphur, that ring being optionally substituted by halo, oxo, cyano, hydroxy, carboxy, aminocarbonyl, nitro, a  $C_5$ - $C_{15}$ -carbocyclic group,  $C_7$ - $C_{15}$ -aralkyl,  $C_1$ - $C_{10}$ -alkyl optionally substituted by  $C_3$ - $C_{10}$ -cycloalkyl, or  $C_1$ - $C_{10}$ -alkoxy optionally substituted by  $C_3$ - $C_{10}$ -cycloalkyl;

$R^{30}$  and  $R^{31}$  are independently hydrogen,  $C_1$ - $C_{10}$ -alkyl or  $C_1$ - $C_{10}$ -alkoxy, either of which being optionally substituted by a  $C_5$ - $C_{15}$ -carbocyclic group;

$n^5$  is an integer from 0 to 4; and

at least one of  $R^{22}$ ,  $R^{23}$ ,  $R^{24}$  and  $R^{25}$  is a 5- to 12-membered heterocyclic ring wherein at least one of the ring atoms is nitrogen, oxygen or sulphur, that ring being optionally and independently substituted by halo, cyano, hydroxy, carboxy, aminocarbonyl, nitro,  $C_1$ - $C_{10}$ -alkyl,  $C_1$ - $C_{10}$ -alkoxy or  $C_3$ - $C_{10}$ -cycloalkyl,

the other or others of  $R^{22}$ ,  $R^{23}$ ,  $R^{24}$  and  $R^{25}$  being independently hydrogen, halo, cyano, hydroxy, carboxy, aminocarbonyl, nitro,  $C_1$ - $C_{10}$ -alkyl,  $C_1$ - $C_{10}$ -alkoxy or  $C_3$ - $C_{10}$ -cycloalkyl.

2. A compound according to claim 1, where

$-C\sim Y-$  is  $-CH=CH-$ ;

$R^1$  is hydroxy and  $R^2$  is hydrogen;

G is a group having the formula Ia, Ib, Ic, Id or Ie;

$n^1$  is 0 or 1;

when  $n^1$  is 0,  $R^a$  is  $-\text{CR}^{26}\text{R}^{27}-$ ,  $-\text{CH}_2-\text{CH}_2-$ ,  $-\text{CH}_2-\text{CH}_2-\text{CH}_2-$ ,  $-\text{CH}_2-\text{O}-\text{CH}_2-$  or  $-\text{CH}_2-\text{CH}_2-\text{S}-$ ,  
and  $R^b$  is  $-\text{CR}^{28}\text{R}^{29}-$ ,  $-\text{CH}_2-\text{O}-$  or a bond,

otherwise when  $n^1$  is 1,  $R^a$  and  $R^b$  are both  $-\text{CR}^{26}\text{R}^{27}-$ ;

$R^c$  is hydrogen or  $\text{C}_1\text{-C}_{10}$ -alkyl optionally substituted by a  $\text{C}_5\text{-C}_{15}$ -carbocyclic group or by  $\text{C}_1\text{-C}_{10}$ -alkoxy,

or when  $R^b$  is  $-\text{CR}^{26}\text{R}^{27}-$  or  $-\text{CR}^{28}\text{R}^{29}-$ ,  $R^c$  and  $R^b$  form a  $\text{C}_5\text{-C}_{15}$ -carbocyclic group;

$R^3$ ,  $R^4$ ,  $R^5$  and  $R^6$  are independently hydrogen,  $\text{C}_1\text{-C}_{10}$ -alkyl or  $\text{C}_1\text{-C}_{10}$ -alkoxy;

$R^{26}$ ,  $R^{27}$  and  $R^{28}$  are independently hydrogen,  $\text{C}_1\text{-C}_{10}$ -alkyl,  $\text{C}_1\text{-C}_{10}$ -alkoxy or a 5- or 6-membered heterocyclic ring wherein at least one of the ring atoms is nitrogen, oxygen or sulphur;

$R^{29}$  is  $\text{C}_1\text{-C}_{10}$ -alkyl or  $\text{C}_1\text{-C}_{10}$ -alkoxy;

$n^2$  is 0;

C-C denotes C=C or CH-CH;

$R^7$  and  $R^8$  are both hydrogen;

$R^9$  and  $R^{10}$  are independently hydrogen or  $\text{C}_1\text{-C}_{10}$ -alkyl,

or  $R^9$  and  $R^{10}$  together form a  $\text{C}_3\text{-C}_{10}$ -cycloalkyl or  $\text{C}_3\text{-C}_{10}$ -cycloalkenyl in either case

optionally substituted by  $\text{C}_1\text{-C}_{10}$ -alkyl;

$R^{11}$  is hydrogen, hydroxy, a  $\text{C}_3\text{-C}_{15}$ -carbocyclic group or  $\text{C}_1\text{-C}_{10}$ -alkyl optionally substituted by a  $\text{C}_3\text{-C}_{15}$ -carbocyclic group;

$n^3$  is 0;

$R^{12}$  is  $\text{C}_1\text{-C}_{10}$ -alkyl substituted by  $\text{C}_1\text{-C}_{10}$ -alkoxy,  $\text{C}_7\text{-C}_{15}$ -aralkyloxy or by a  $\text{C}_5\text{-C}_{15}$ -carbocyclic group;

$R^{13}$ ,  $R^{14}$ ,  $R^{15}$  and  $R^{16}$  are independently hydrogen or  $\text{C}_1\text{-C}_{10}$ -alkyl;

$n^4$  is 0 or 1;

$R^{17}$  and  $R^{18}$  are both methylene;

$R^{19}$  is hydrogen;

$R^{20}$  and  $R^{21}$  form a 5- or 6-membered heterocyclic ring wherein at least one of the ring atoms is nitrogen, oxygen or sulphur, that ring being optionally substituted by oxo,  $\text{C}_7\text{-C}_{15}$ -aralkyl or  $\text{C}_1\text{-C}_{10}$ -alkyl optionally substituted by  $\text{C}_3\text{-C}_{10}$ -cycloalkyl;

$n^5$  is 0; and  
 at least one of  $R^{22}$ ,  $R^{23}$ ,  $R^{24}$  and  $R^{25}$  is a 5- to 12-membered heterocyclic ring wherein at least one of the ring atoms is nitrogen, oxygen or sulphur, that ring being optionally and independently substituted by halo or  $C_1$ - $C_{10}$ -alkyl, the other or others of  $R^{22}$ ,  $R^{23}$ ,  $R^{24}$  and  $R^{25}$  being hydrogen.

3. A compound according to claim 2, where

-C-Y- is -CH=CH-;

$R^1$  is hydroxy and  $R^2$  is hydrogen;

$n^1$  is 0 or 1;

when  $n^1$  is 0,  $R^a$  is  $-CR^{26}R^{27}-$ ,  $-CH_2-CH_2-$ ,  $-CH_2-CH_2-CH_2-$ ,  $-CH_2-O-CH_2-$  or  $-CH_2-CH_2-S-$ , and  $R^b$  is  $-CR^{28}R^{29}-$ ,  $-CH_2-O-$  or a bond,

otherwise when  $n^1$  is 1,  $R^a$  and  $R^b$  are both  $-CR^{26}R^{27}-$ ;

$R^c$  is hydrogen or  $C_1$ - $C_4$ -alkyl optionally substituted by a  $C_5$ - $C_{10}$ -carbocyclic group or by  $C_1$ - $C_4$ -alkoxy,

or when  $R^b$  is  $-CR^{26}R^{27}-$  or  $-CR^{28}R^{29}-$ ,  $R^c$  and  $R^b$  form a  $C_5$ - $C_{10}$ -carbocyclic group;

$R^3$ ,  $R^4$ ,  $R^5$  and  $R^6$  are independently hydrogen,  $C_1$ - $C_4$ -alkyl or  $C_1$ - $C_4$ -alkoxy;

$R^{26}$ ,  $R^{27}$  and  $R^{28}$  are independently hydrogen,  $C_1$ - $C_4$ -alkyl,  $C_1$ - $C_4$ -alkoxy or a 5- or 6-membered heterocyclic ring wherein at least one of the ring atoms is nitrogen, oxygen or sulphur;

$R^{29}$  is  $C_1$ - $C_4$ -alkyl or  $C_1$ - $C_4$ -alkoxy;

$n^2$  is 0;

C~C denotes C=C or CH-CH;

$R^7$  and  $R^8$  are both hydrogen;

$R^9$  and  $R^{10}$  are independently hydrogen or  $C_1$ - $C_4$ -alkyl,

or  $R^5$  and  $R^6$  together form a  $C_3$ - $C_6$ -cycloalkyl or  $C_3$ - $C_6$ -cycloalkenyl in either case optionally substituted by  $C_1$ - $C_4$ -alkyl;

$R^{11}$  is hydrogen, hydroxy, a  $C_3$ - $C_{10}$ -carbocyclic preferably  $C_3$ - $C_6$ -cycloalkyl, or  $C_1$ - $C_{10}$ -alkyl optionally substituted by a  $C_3$ - $C_{10}$ -carbocyclic group preferably an unsaturated  $C_5$ - $C_8$ -carbocyclic group;

$n^3$  is 0;

R<sup>12</sup> is C<sub>1</sub>-C<sub>14</sub>-alkyl substituted by C<sub>1</sub>-C<sub>6</sub>-alkoxy, C<sub>7</sub>-C<sub>10</sub>-aralkyloxy or by a C<sub>5</sub>-C<sub>10</sub>-carbocyclic group;

R<sup>13</sup> and R<sup>16</sup> are both hydrogen;

R<sup>14</sup> and R<sup>15</sup> are independently hydrogen or C<sub>1</sub>-C<sub>4</sub>-alkyl.

n<sup>4</sup> is 0 or 1;

R<sup>17</sup> and R<sup>18</sup> are both methylene;

R<sup>19</sup> is hydrogen;

R<sup>20</sup> and R<sup>21</sup> form a 5- or 6-membered heterocyclic ring wherein at least one of the ring atoms is nitrogen, oxygen or sulphur, that ring being optionally substituted by oxo, C<sub>7</sub>-C<sub>10</sub>-aralkyl or C<sub>1</sub>-C<sub>4</sub>-alkyl optionally substituted by C<sub>3</sub>-C<sub>6</sub>-cycloalkyl.

n<sup>5</sup> is 0; and

at least one of R<sup>22</sup>, R<sup>23</sup>, R<sup>24</sup> and R<sup>25</sup> is a 5- to 9-membered heterocyclic ring wherein at least one of the ring atoms is nitrogen, oxygen or sulphur, that ring being optionally and independently substituted by halo or C<sub>1</sub>-C<sub>4</sub>-alkyl, the other or others of R<sup>22</sup>, R<sup>23</sup>, R<sup>24</sup> and R<sup>25</sup> being hydrogen.

4. A compound according to claim 1 substantially as herein described with reference to any one of the Examples.

5. A compound according to any one of the preceding claims in combination with another drug substance which is an anti-inflammatory, a bronchodilator, an antihistamine or an immunosuppressive or anti-tussive drug substance.

6. A compound according to any one of the preceding claims for use as a pharmaceutical.

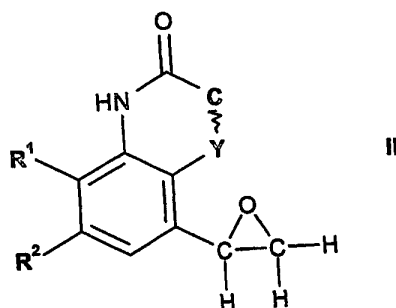
7. A pharmaceutical composition comprising a compound according to any one of claims 1 to 5, optionally together with a pharmaceutically acceptable carrier.

8. Use of a compound according to any one of claims 1 to 5 for the preparation of a medicament for the treatment of a condition which is prevented or alleviated by activation of the  $\beta_2$ -adrenoreceptor.

9. Use of a compound according to any one of claims 1 to 5 for the preparation of a medicament for the treatment of an obstructive or inflammatory airways disease.

10. A process for the preparation of a compound of formula I in free or salt or solvate form comprising:

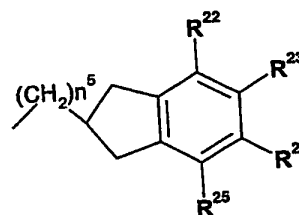
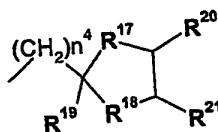
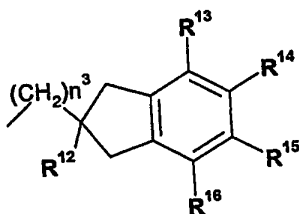
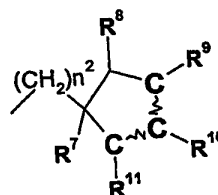
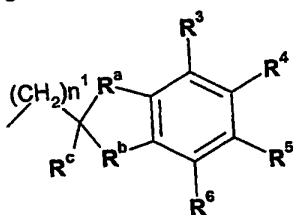
(i) (A) reacting a compound of formula II



or a protected form thereof wherein -C-Y-,  $R^1$  and  $R^2$  are as hereinbefore defined, with a compound of formula III

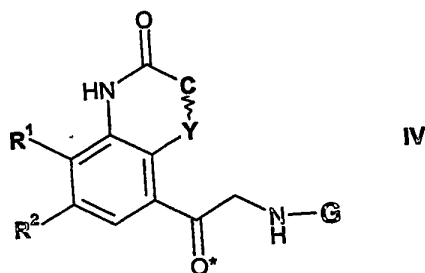


where G is a group of formula Ia, Ib, Ic, Id or Ie



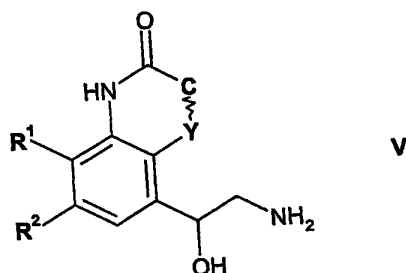
or a protected form thereof wherein  $n^1$ ,  $n^2$ ,  $n^3$ ,  $n^4$ ,  $n^5$ ,  $R^a$ ,  $R^b$ ,  $R^c$  and  $R^3$  through  $R^{25}$  are as hereinbefore defined; or

(B) reducing a compound of formula IV

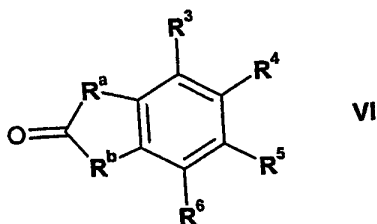


or a protected form thereof wherein -C~Y-,  $R^1$ ,  $R^2$  and G are as hereinbefore defined, to convert the indicated keto group into -CH(OH); or

(C) for the preparation of compounds of formula I where G is a group of formula Ia,  $R^c$  is hydrogen and  $n^1$  is 0, reacting a compound of formula V

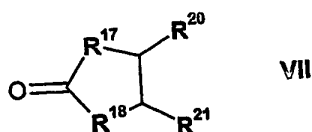


or a protected form thereof wherein -C~Y-,  $R^1$  and  $R^2$  are as hereinbefore defined, with a compound of formula VI



or a protected form thereof wherein  $R^a$ ,  $R^b$ ,  $R^3$ ,  $R^4$ ,  $R^5$  and  $R^6$  are as hereinbefore defined; or

(D) for the preparation of compounds of formula I where G is a group of formula 1d,  $R^{19}$  is hydrogen and  $n^4$  is 0, reacting a compound of formula V or a protected form thereof wherein -C~Y-,  $R^1$  and  $R^2$  are as hereinbefore defined, with a compound of formula VII

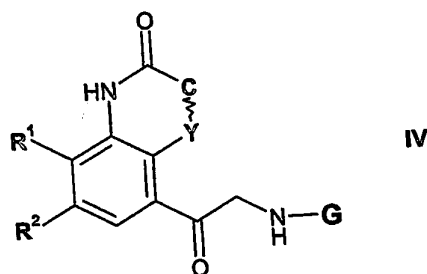




or a protected form thereof wherein  $R^{17}$ ,  $R^{18}$ ,  $R^{20}$  and  $R^{21}$  are as hereinbefore defined; and

- (ii) recovering the resultant compound of formula I in free or salt or solvate form.

11. A compound of formula IV



in free or salt or solvate form, where  
 $-C(Y)-$ ,  $R^1$ ,  $R^2$  and  $G$  are as defined in claim 1.